

# TESCHOVIRUS AS THE CAUSATIVE AGENT OF ENCEPHALOMYELITIS ON TWO SWINE FARMS IN THE NETHERLANDS

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**Introduction:** Porcine teschovirus (PTV) belongs to the genus Teschovirus in the family Picornaviridae. This virus circulates among wild and domesticated pig populations without causing any health problems. However, a pathogenic variant PTV1 (Tesch disease), or co-infection with immunosuppressive viruses such as porcine reproductive and respiratory syndrome virus (PRRSV) or porcine circovirus (PCV), could result in serious economic losses in the swine industry. We examined weanling pigs with neurological signs on two swine farms in the Netherlands to identify the underlying cause.

**Materials and Methods:** Pathological examination was performed on pigs from both farms ( $n = 5$ ). After histological evaluation, brain and spinal cord samples were used for PCR, virus isolation and whole genome sequencing to identify the serotype of PTV and exclude possible immunosuppressive viruses.

**Results:** Histology of brain and spinal cord revealed clear non-suppurative encephalomyelitis in all of the pigs. The other organs did not display any relevant histological changes. Additional immunoperoxidase labelling was negative for pathogenic PTV1. However, after PCR and virus sequencing we identified a different PTV isolate for each farm. The pigs were negative by PCR for PRRSV and PCV2.

**Conclusions:** New pathogenic variants of PTV still re-emerge in domesticated pig populations, causing clear neurological signs in a substantial number of pigs. This disease is often underdiagnosed, because histological examination in combination with PCR is needed for determination. Awareness by local veterinarians and pathologists is needed to investigate the incidence of pathogenic PTV in wild and domestic pig populations.

# CELL TROPISM OF MIDDLE EAST RESPIRATORY SYNDROME CORONAVIRUS IN EXPERIMENTALLY INFECTED DROMEDARIES

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**Introduction:** Middle East respiratory syndrome coronavirus (MERS-CoV) has caused hundreds of human deaths since 2012. The dromedary (*Camelus dromedarius*) is suggested to play an important role in the epidemiology of this emerging infectious disease and develops only transient and mild clinical signs after infection. However, both the basic pathomorphology of the disease and the viral cell tropism in this species are still elusive.

**Materials and Methods:** Dromedaries were infected experimentally with MERS-CoV. The respiratory tract was investigated histologically, immunohistologically and ultrastructurally. Double immunofluorescence was representatively performed in order to identify the target cells of MERS-CoV in dromedaries. Ciliary pathology was evaluated by scanning electron microscopy and immunofluorescence.

**Results:** The animals showed inflammatory alterations within the upper respiratory tract. MERS-CoV was found predominantly within cytokeratin-positive apical epithelial cells and rarely within macrophages. Additionally, marked ciliary loss was evident within the respiratory epithelium of the nasal cavity and trachea as demonstrated by scanning electron microscopy and immunofluorescence for acetylated alpha-tubulin.

**Conclusions:** Administration of MERS-CoV leads to an infection predominantly restricted to cytokeratin-positive respiratory epithelial cells of the upper respiratory tract in dromedaries, which is in contrast to the marked pulmonary disease in man. Furthermore, the infection is accompanied by impressive ciliary loss in the upper respiratory tract of dromedaries.